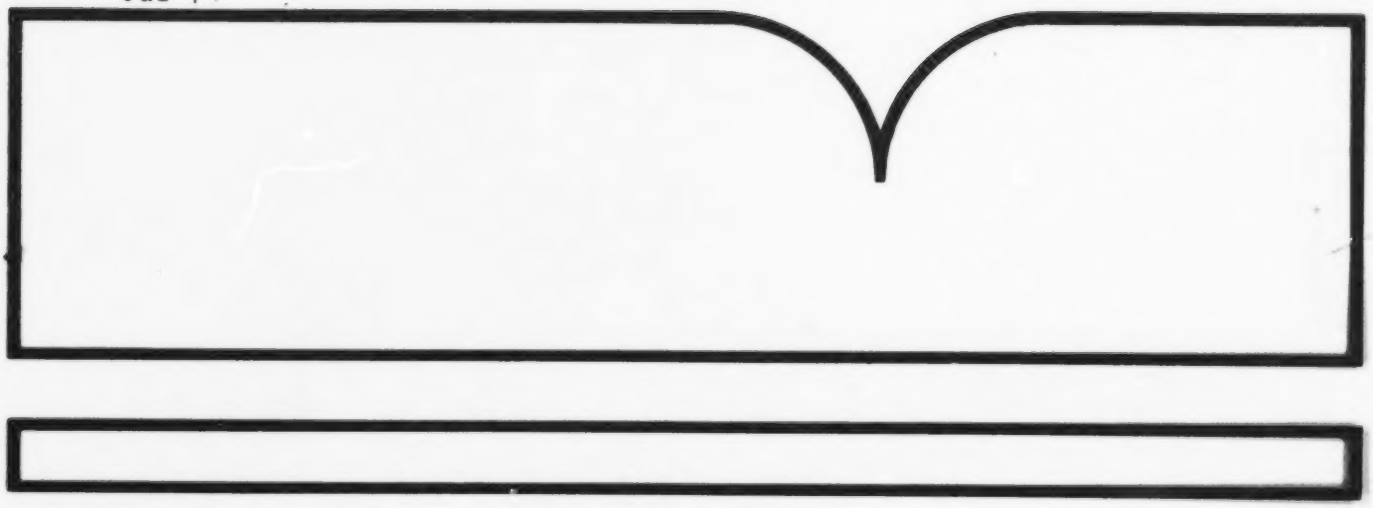
PB80-181985

Evaluation of Analube Synthetic Lubricant

(U.S.) Environmental Protection Agency
Ann Arbor, MI

Jul 74



U.S. Department of Commerce
National Technical Information Service
NTIS

PB80-181985

EPA-AA-TAEB 75-1

Evaluation of Analube Synthetic Lubricant

July 1974

Technology Assessment and Evaluation Branch
Emission Control Technology Division
Office of Mobile Source Air Pollution Control
Environmental Protection Agency

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-AA-TAEB 75-1	2.
3. RECIPIENT'S ACCESSION NO. PB 80 181985	
4. TITLE AND SUBTITLE Evaluation of Analube Synthetic Lubricant	5. REPORT DATE July 1974
	6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) no author	8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS U.S. Environmental Protection Agency Office of Mobile Source Air Pollution Control Emission Control Technology Division Ann Arbor, Michigan 48105	10. PROGRAM ELEMENT NO.
	11. CONTRACT/GRANT NO.
12. SPONSORING AGENCY NAME AND ADDRESS SAME	13. TYPE OF REPORT AND PERIOD COVERED Technical
	14. SPONSORING AGENCY CODE

15. SUPPLEMENTARY NOTES

16. ABSTRACT

The Environmental Lubricants Company of New Britain, Connecticut, contacted the Office of Air and Water Programs to request a laboratory and engineering evaluation of their polyglycol base synthetic lubricant. Supplied with the request was a test report indicating significant reductions of exhaust emissions and fuel economy improvement. A confirmatory test program was conducted by the Technology Assessment and Evaluation Branch of the Emission Control Technology Division.

Analube is a synthetic lubricant formulated from a polyglycol base with a molybdenum compound for lubricity. This synthetic lubricant is marketed as a replacement for the normal hydrocarbon motor oils. There was no cost information provided by the manufacturer.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Emission Exhaust Gases Tests Exhaust Emissions Lubricating Oils Synthetic Oils	Fuel Economy Analube Synthetic Lubricants	

18. DISTRIBUTION STATEMENT RELEASE UNLIMITED	19. SECURITY CLASS *(This Report)* UNCLASSIFIED	21. NO. OF PAGES
	20. SECURITY CLASS *(This page)* UNCLASSIFIED	22. PRICE

EPA Form 2220-1 (9-73)

Background

The Environmental Lubricants Company of New Britain, Connecticut, contacted the Office of Air and Water Programs to request a laboratory and engineering evaluation of their polyglycol base synthetic lubricant. Supplied with the request was a test report indicating significant reductions of exhaust emissions and fuel economy improvement. A confirmatory test program was conducted by the Technology Assessment and Evaluation Branch of the Emission Control Technology Division.

Description

Analube is a synthetic lubricant formulated from a polyglycol base with a molybdenum compound for lubricity. This synthetic lubricant is marketed as a replacement for the normal hydrocarbon motor oils. There was no cost information provided by the manufacturer.

Test Program

A 1971 Ford Galaxie 500 equipped with a 351 CID engine from the EPA fleet was used for the test. Six tests were conducted, two with a standard 10W-40 motor oil for baseline, three with a fill of Analube, and one more with 10W-40 motor oil to re-establish baseline. Each series of tests was preceded by a drain and oil filter change. Prior to the Analube emission tests, a short, manufacturer requested, preconditioning route was driven. All testing was performed in accordance with the 1975 Federal Test Procedure as outlined in the November 15, 1972, Federal Register.

All tests were conducted using the standard dynamometer inertia loading of 4500 pounds and Indolene Clear as the test fuel.

Test Results

The test results are presented in the Appendix of this report. These results are summarized below:

Summary of Emission Results
% Change from Baseline

	Analube
HC	0 change
CO	20% increase
CO_2	4% decrease
NOx	0 change
Fuel Economy	3.6% improvement

Conclusions

1. The test results do not indicate significant reductions in exhaust emission levels with the use of the Analube synthetic lubricant.

2. The apparent fuel economy improvement is not considered significant as the percentage improvement is well within the ECTD measured test-to-test variability.

TABLE I

Analube Synthetic Oil Test Results

Baseline (10W-40 Hydrocarbon base oil)

Date	HC	CO	CO_2	NOx	'75 MPG
4-26	2.11	15.7	757.38	3.09	11.2
4-29	2.11	18.7	761.38	3.05	11.0
Average	2.11	17.2	759.38	3.07	11.1

Analube Synthetic Oil

Date	HC	CO	CO_2	NOx	'75 MPG
5-7	2.09	19.6	732.61	3.08	11.4
5-8	2.10	20.7	737.53	3.20	11.3
5-9	2.11	21.8	711.47	2.94	11.8
Average	2.10	20.7	727.20	3.07	11.5
% Change from Baseline	0	+20.4	-4.2	0	+3.6

Retest of Baseline Oil

Date	HC	CO	CO_2	NOx	'75 MPG
5-21	2.16	19.6	754.00	*	11.2

* NOx measurement in error due to instrument malfunction

☆ U.S. GOVERNMENT PRINTING OFFICE: 1979- 651-112/0103